

fructibus nervis acutioribus rostroque evidentiori, recto, bracteis erecto-patentibus; culmis decurvis.—(Nomen *tumidicarpa*, Bot. Not. 1849, p. 6 [16] ut vox hybrida, in *ædocarpam* mutandum)."

This is quite our commonest form of the "*flava*-group," and is the "*flava* var. *minor* Townsend." (See Journ. Bot. 1881, 163.)

Nearer to *Æderi* than to *flava* (segregate), or *lepidocarpa* Tausch., by its straight, not abruptly deflexed, beak, and its (usually) smaller perigynia. In some respects it is intermediate.

*C. FLAVA* × *ÆDERI*. Mid Perth: Creag Mhor, Glen Lochay, A. Somerville, 1889. Sussex E.: Copyhold, Cuckfield, Mrs. Davy, 1903, and near Colman's Hatch, Ashdown Forest, 1896.

The only *obviously* sterile spikes are those on the Cuckfield plants.

*C. LEPIDOCARPA* Tausch. Somerset N.: Max Bog, Winscombe, J. W. White, 1903. Kent: Keston Common, 1846 (hb. R. Pryor). See Rep. Bot. Exch. Club for 1892, 390.

A much more frequent plant in Scotland than in England.

*C. RIPARIA* Curt. var. *HUMILIS* Uechtr. Sussex W.: near Brew-hurst Mill, Loxwood, 1902.

First mentioned by Fiek, Fl. Schlesien. 492 (1881), as under:—"*C. riparia* Curt. γ *humilis* Uechtr. More dwarf (0.40–0.50 m.), smaller in all its parts; leaves shorter, only 3–6 mm. broad, strongly greyish green; female spikelets usually 2, more distant, 0.20–0.30 m. long, but densely flowered, cylindrical or ovate at the base, very shortly stalked or almost sessile. The smaller examples almost resemble in appearance *C. distans* L., the larger ones remind one of *C. nutans* Host." (U. in litt.).

Ascherson & Graebner (*l.c.* 216) say that this is a "*forma nana gracillima*," with imperfect fruits, which Christ notes in Bull. Soc. Bot. Belg. xxvii. 2, 163, may perhaps be a hybrid with *C. distans*.

A very neat little plant, with small spikes of a different outline to those of *riparia*, and the glumes and perigynia also differ, the former not so long as in type. Plant about 18 in. high. Hardly likely to be a hybrid with *distans* in this locality.

## MYCETOZOA FROM JAPAN.

By ARTHUR LISTER, F.R.S., AND GULIELIMA LISTER, F.L.S.

IN January, 1906, the Botanical Department of the British Museum received forty-six specimens of Mycetozoa, consisting of twenty-nine species, presented by Mr. Kumagusu Minakata, who collected them during the years 1902 to 1905 in Kii, the southernmost province of Japan proper, in about latitude 34 deg. N.

The only other collection from that country which has come under our notice was sent by Prof. Miyoshi, of Tokio, in 1902, to Prof. Marshall Ward, and is now in the Cambridge Herbarium. It consists of specimens of eighteen species, noticed in this Journal for 1904 (p. 97). Of these, nine appear again in the following list, and are marked with a star. The total number of species of Myce-



tozoa hitherto recorded from Japan, to our knowledge, is therefore thirty-eight. They include none that are entirely new, and correspond in character with gatherings from the United States and the West Indies, though some are of rare occurrence and of great interest.

*Ceratiomyxa mucida* Schroet. "Found inside a hollow trunk," K.M. Mt. Nachi, Kii. May 9th, 1903. A white network of depressed sporophores, approaching the var. *porioides*. B.M. 1984.

*C. mucida* var. *porioides*. "Plasmodium white, on dead stumps." K.M. Temma, Kii, Aug. 5th, 1904; immature. B.M. 1983.

*Badhamia hyalina* Berk. var. *papaveracea*. On coniferous bark, Mukôyama, Nachi, Kii. April 18th, 1902. The sporangia are grey, 0.5 mm. diam., with pale ochraceous stalks 0.3 to 0.4 mm. long. The spores are dark purple-brown, warted on the outer third, closely compacted in small clusters of from five to ten. It is a small form with paler and more translucent stalks than we have seen before in this variety. B.M. 1985.

*Physarum viride* Pers. Four specimens; one immature; "plasmodium yellow," K.M. gathered Feb., 1903; three mature, gathered on fallen timber, Nachi, Aug., 1903. It is a very delicate form of the species; the sporangia are bright yellow, scarcely more than 0.2 mm. diam.; none are quite unbroken, and many have shed the spores; the stalks are slender, varying in length from 0.3 to 1 mm., and contain more or less lime and refuse matter in the lower two-thirds; the capillitium is very delicate, with fusiform yellow lime-knots; in some the knots are rounded, somewhat resembling those of *P. tenerum* Rex. B.M. 1986, 1987, 1988, 1989.

*P. nutans* Pers. var. *genuinum*. "On wooden side-work of a well," K.M. Tanabe, Kii. Summer, 1905; typical. B.M. 1990.

*P. nucleatum* Rex. "On dead oak-branches on earth," K.M. Ichinono, Kii. July 23rd, 1903. A very typical specimen; the central ball of lime is perhaps unusually large. B.M., 1991.

\**P. compressum* A. & S. Tanabe, Kii. Aug. 23rd, 1905. This is a good specimen, and quite typical; the compressed sporangia are mostly reniform and curved, on dark stalks. B.M. 1992.

*P. bivalve* Pers. "On fallen trunks. K.M. Kuragaridani; Nachi. June 8th, 1904. The sinuous, wall-shaped sporangia, dehiscing along the ridge, have the usual appearance, except that the flat sides are nut-brown; the capillitium and spores are typical. B.M. 1993.

*P. psittacinum* var. *fulvum*, n. var. On dead wood. Ichinono, Kii. Aug. 24th, 1903. A beautiful form with the usual iridescent sporangia and orange-red lime-knots; the stalks, however, and the bases of the sporangium-walls are fulvous yellow instead of vermillion. We have received this variety once before from the State of New York, and from the striking colour of the stalks propose to distinguish it as var. *fulvum*. We have the usual red-stalked form from New York and Massachusetts. *P. psittacinum* is said by Prof. Macbride to be rare in the United States; it is fairly abundant in Europe, but, except for the Japanese gathering, we have no record of its occurrence in other parts of the Old World. B.M. 1994.



*P. roseum* B. & Br. "On old tub," K.M. Tanabe, Kii. Summer, 1905. A beautiful and perfectly typical specimen. B.M. 1995. Also on fallen trunks, Kuragaridani, Nachi, June 8th, 1904. B.M. 1993, *ex parte*.

*P. melleum* Mass. On fallen leaves. Ichinono, Kii. June 24th, 1904. This is the usual form with brownish yellow sporangia and white stalks. B.M. 1996.

*Fuligo septica* Gmel. Two specimens on dead stumps, quite typical, with yellow lime-knots; spores  $7\ \mu$ . Temma and Isaida. Summer of 1904-5. B.M. 1997, 1998.

\**Diachæa elegans* Fr. On fallen branches. Kuragaridani, Nachi. June 8th, 1904. Typical. B.M. 1999.

*Chondrioderma reticulatum* Rost. "On living stems and leaves of *Lactuca denticulata*," K.M. Ichinono, Kii. July 18th, 1903. The very flat sporangia are thickly scattered over the leaves; the lime on the sporangium-walls has often become crystalline, as not infrequently happens; it has the usual very slender capillitium and spores  $7\ \mu$ . diam. B.M. 2000

\**Didymium nigripes* Fr. var. *xanthopus*. There are three specimens of this species: one on old dry radish-roots, Nachi, July, 1903; one on bamboo sheaths, Ichinono, May, 1904; and one on the leaves of *Ternstræmia*, Ichinono, June, 1904. They are fine gatherings of precisely our common English form. B.M. 2001, 2002, 2003.

*D. effusum* Link. "On fallen leaves, bark, &c., in farm-yard," K.M. Ichinono, Kii. June 25th, 1904. Typical, with white stalks, columella and capillitium; spores  $8\ \mu$  diam. B.M. 2004.

\**Stemonitis splendens* Rost. On dead trunks. Kuragaridani, Nachi. Aug. 17th, 1903. This is a fine specimen; the sporangia are 18 mm. long, and are of the form *fenestrata*, in which the persistent sporangium-wall is perforated with round openings between the meshes of the superficial net. B.M. 2005.

\**Lamproderma arcyronema* Rost. "On rotten stumps, covered with a very fugacious pellicle, like quicksilver in colour," K.M. There are four fine examples of this species; the capillitium is more slender than in most specimens received from the United States, but is similar to that in the former collection from Japan sent by Prof. Miyoshi. Gathered in Kii province, summers of 1903-5. B.M. 2006, 2007, 2008, 2009.

*Cribraria tenella* Schrad. On old shingles. Tanabe, Kii. Summer, 1905. This is a characteristic form: the cup is either small or wanting; the numerous subhemispherical nodes are each connected with those adjoining by four or five slender threads; there are scarcely any free rays; the slender stalks vary in length from 1.5 mm. to 2.5 mm. B.M. 2010.

*C. intricata* Schrad. var. *dictydioides*. On dead stumps. Isaida, Kii. Aug. 2nd, 1905. There are many free rays, but there is a tendency towards *C. tenella* in the nodes being to a great extent hemispherical. B.M. 2014.

*Lindbladia Tubulina* Fr. There are three examples of this species. One is a remarkable form, "on dead stump." Isaida, Kii.



Aug. 2nd, 1905. It consists of several pulvinate æthalia about 2 mm. broad; the walls of the convoluted sporangia are perforated as in *Enteridium*, producing a network with rounded meshes; a convex membranous cap, mottled with plasmodic granules, forms the apex of each sporangium. B.M. 2011. A second specimen is on fallen leaves. Mifureyama, Seto, Kii. January, 1902. The æthalia are composed of convoluted sporangia of the usual type; the sporangium walls are densely strewn with clusters of dark plasmodic granules. B.M. 2012. A third is var. *simplex* Rex, on dead trunks. Inyônataki, Nachi, Kii. Aug. 11th, 1903. It consists of several clusters of cylindrical sporangia, each about 1 mm. long and 0.3 mm. broad; the number of individuals in a cluster varies from about six to forty; they are either closely adhering, or free in the upper half, sessile or shortly stalked; the convex membranous caps are beset with dark plasmodic granules, arranged in a net-like pattern, such as is often seen in *Cribraria argillacea*. This variety has, to our knowledge, been recorded hitherto only from the United States. B.M. 2013.

\**Tubulina fragiformis* Pers. "On rotting hollow *Pasania cuspidata*," K.M. Isaida, Kii. July 8th, 1905. The clusters of sporangia vary in size; some are pulvinate with the usual contour; others are small, and have a stalk-like base; spores 5 to 6  $\mu$ . It suggests an intermediate form between *T. fragiformis* and *T. stipitata* Rost. B.M. 2015.

*T. stipitata* Rost. There are two specimens of this species. One "on rotting stump of camphor-tree" K.M., Isaida, Kii, July 8th, 1905—consists of small clusters on long common stalks, varying in thickness according to the number of the sporangia. B.M. 2016. The other, on rotten stump—Nachi, Kii. June 15th, 1904—has subellipsoid sporangia, arranged in numerous bunches of seven or more on comparatively slender stalks, but crowded together so as to form large cushions. B.M. 2026.

*Trichia Botrytis* Pers. var. *a*. On logs. Mukôyama, Nachi. It is our most frequent English form. B.M. 2017.

*Hemitrichia clavata* Rost. Two specimens, on rotting stumps. Nachi. June and July, 1903. One is mostly immature, but both are quite typical. B.M. 2018, 2019.

*H. Serpula* Rost. On sticks. Ichinono, Kii. Spring, 1903. Perfectly formed and typical. B.M. 2020.

\**Arcyria albida* Pers. There are four specimens, very similar in character, from Nachi, 1903 and 1904. The sporangia are ovoid, and shortly stalked, white or grey in colour; the threads of the capillitium are closely warted, as in our most frequent English gatherings. B.M. 2021, 2022, 2023, 2024.

\**A. punica* Pers. On dead stumps. Mt. Nachi. Aug. 4th, 1903. Typical. B.M., 2025.

*Lycogala conicum* Pers. "On bark on earth. Ichinono, Kii. May 7th, 1903. Horny, deep scarlet, then umber," K.M. The specimen consists of a few æthalia about 1.5 mm. high by 0.8 mm. broad, with characteristic dark vesicles. B.M. 2027.

\**L. miniatum* Pers. "On rotten chips, &c. Ichinono, Kii. May 25th, 1904. Plasmodium bright yelk-yellow." K.M. Small globose æthalia. Typical. B.M. 2028.